

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) A catalyst for decomposing an organic halide(s)

comprising:

(a) 1 to 30 wt. % of characterized in comprising a water-insoluble vanadyl sulfate (β -VOSO₄);

(b) 20 to 70 wt. % of at least one oxide comprising one of titanium and niobium; and

(c) 20 to 70 wt. % of at least one sulfate comprising at least one atom selected from the group consisting of calcium, barium, strontium, and lead,

where (a) + (b) + (c) = 100 wt. %.

2. (Canceled)

3. (Canceled)

² (Currently amended) A catalyst as claimed in claim 2 1 wherein the oxide is titanium dioxide.

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5 (Currently amended) A catalyst as claimed in claim 2 1 wherein the sulfate is barium sulfate.

6. (Previously presented) A catalyst as claimed in claim 1 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and *B* bromoalkenes and polybromoalkenes.

7. (Original) A catalyst as claimed in claim 6 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

8. (Previously presented) A method of decomposing organic halide(s) in a gas characterized by contacting a gas containing an organic halide(s) with the catalyst described in claim 1 to decompose the organic halide(s).

9. (Original) A method of decomposing as claimed in claim 8 wherein the contact between the organic halide(s) and the catalyst is carried out at a temperature from 140 to 300 °C.

10. (Previously presented) A method of decomposing as claimed in claim 8 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

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11. (Original) A method of decomposing as claimed in claim 10 wherein the organic halide(s) is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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B2 (New) A method of decomposing organic halide(s) in a gas characterized by contacting a gas containing an organic halide(s) with the catalyst described in claim 4 to decompose the organic halide(s).

13. (New) A method of decomposing organic halide(s) in a gas characterized by contacting a gas containing an organic halide(s) with the catalyst described in claim 5 to decompose the organic halide(s).

14. (New) A method of decomposing at least one organic halide, comprising contacting a gas containing at least one organic halide with a catalyst comprising water-insoluble vanadyl sulfate (β -VOSO₄).

15. (New) A method of decomposing as claimed in claim 14 wherein the catalyst further comprises at least one oxide comprising at least one atom selected from the group consisting of titanium, zirconium, niobium, molybdenum, tungsten and chromium; and at least one sulfate comprising at least one atom selected from the group consisting of alkaline earth metals and lead.

16. (New) A method of decomposing as claimed in claim 15 wherein the catalyst comprises 0 to 70 wt. % of the oxide(s), 0 to 70 wt. % of the sulfate(s), and 0.5 to 100 wt. % of the water-insoluble vanadyl sulfate.

17. (New) A method of decomposing as claimed in claim 15 wherein the oxide is titanium dioxide.

18. (New) A method of decomposing as claimed in claim 16 wherein the oxide is titanium dioxide.

19. (New) A method of decomposing as claimed in claim 15 wherein the sulfate is barium sulfate.

20. (New) A method of decomposing as claimed in claim 16 wherein the sulfate is barium sulfate.

21. (New) A method of decomposing as claimed in claim 17 wherein the sulfate is barium sulfate.

22. (New) A method of decomposing as claimed in claim 18 wherein the sulfate is barium sulfate.

23. (New) A method of decomposing as claimed in claim 14 wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

23 24. (New) A method of decomposing as claimed in claim *13* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

25 25. (New) A method of decomposing as claimed in claim *16* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

26 26. (New) A method of decomposing as claimed in claim *17* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

27 27. (New) A method of decomposing as claimed in claim *18* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and

polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

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28. ³³ (New) A method of decomposing as claimed in claim ¹⁹ wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

29. ²² (New) A method of decomposing as claimed in claim ²⁰ wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

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30. ²³ (New) A method of decomposing as claimed in claim ²¹ wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

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31. (New) A method of decomposing as claimed in claim 22 wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins; polychlorobiphenyls; chloroalkanes and polychloroalkanes; chloroalkenes and polychloroalkenes; bromodioxins and polybromodioxins; polybromobiphenyls; bromoalkanes and polybromoalkanes; and bromoalkenes and polybromoalkenes.

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32. (New) A method of decomposing as claimed in claim 23 wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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33. (New) A method of decomposing as claimed in claim 24 wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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34. (New) A method of decomposing as claimed in claim *25* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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35. (New) A method of decomposing as claimed in claim *26* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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36. (New) A method of decomposing as claimed in claim *27* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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37. (New) A method of decomposing as claimed in claim *28* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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38. (New) A method of decomposing as claimed in claim *29* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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39. (New) A method of decomposing as claimed in claim *30* wherein the at least one organic halide is at least one of chlorodioxins and polychlorodioxins, polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol, chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls, bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether, bromomethane and bromoethylene.

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40. (New) A method of decomposing as claimed in claim 31 wherein the at least
one organic halide is at least one of chlorodioxins and polychlorodioxins,
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polychlorobiphenyls, chlorobenzene, dichlorobenzene, chlorotoluene, chlorophenol,
chloromethane, chloroethylene, bromodioxins and polybromodioxins, polybromobiphenyls,
bromobenzene, dibromobenzene, bromotoluene, bromophenol, polybromobiphenyl ether,
bromomethane and bromoethylene.
